WHAT IS CLAIMED IS:

1. An image signal processing method using a plurality of photosensitive cells, each of which is shifted from a geometric center of an adjoining photosensitive cell by half a pitch in at least one of a direction of row and a direction of column for separating incident light representative of a scene into three primary colors and executing photoelectric transduction with separated light, using said plurality of photosensitive cells as real pixels, converting image signals output from said plurality of image sensing device to digital image data, and executing, by using said digital image data, interpolation for generating virtual pixels between said real pixels to thereby generate luminance data and chrominance data, said image signal processing method comprising:

a first step of obtaining, when the image data are bidimensionally arranged such that green of the image data appears in a square lattice pattern, red pixel data from the real pixels facing each other in one diagonal direction at both sides of green, and obtaining blue pixel data from the real pixels facing each other in the other diagonal direction at both sides of green;

a second step of generating, when either one of a red real pixel and a blue real pixel is a subject pixel to be dealt with, pixel data of a complementary color complementary to green by using a plurality of pixel data surrounding said subject pixel and positioned in a direction of correlation, while making a decision for improving correlation accuracy;

a third step of generating pixel data to be interpolated in a virtual pixel from pixel data of a same color facing each other in at least one of a horizontal direction and

a vertical direction by using the pixel data of the complementary color and the green pixel data; and

a fourth step of limiting a frequency band in a direction perpendicular to a direction used for interpolation.

2. The method in accordance with claim 1, wherein said second step comprises a fifth step of making a decision on a horizontal/vertical correlation by using pixel data identical in color with the subject pixel and adjoining said subject pixel in the horizontal direction and the vertical direction.

3. The method in accordance with claim 2, wherein said fifth step produces, before the decision, an absolute value of a difference between pixel data identical in color with the subject pixel and adjoining said subject pixel at a left-hand side in the horizontal direction and said subject pixel as a first horizontal difference absolute value, produces an absolute value of a difference between pixel data identical in color with said subject pixel and adjoining said subject pixel at a right-hand side in the horizontal direction and said subject pixel as a second horizontal difference absolute value, produces a sum of said first horizontal difference absolute value and said second horizontal difference absolute value as horizontal comparison data, produces an absolute value of a difference between pixel data identical in color with said subject pixel and positioned vertically above said subject pixel as a first vertical difference absolute value, produces an absolute value of a difference between pixel data identical in color with said subject pixel and positioned vertically below said subject pixel as a second vertical

difference absolute value, and produces a sum of said first vertical difference absolute value and said second vertical difference absolute value as vertical comparison data;

said fifth step comprising:

a first decision step of determining that a vertical correlation exists if a difference produced by subtracting said vertical comparison data from said horizontal comparison data is greater than or equal to a preselected value;

a second decision step of determining that a horizontal correlation exists if a difference produced by subtracting said horizontal comparison data from said vertical comparison data is greater than or equal to a preselected value; and

a third decision step of determining that a correlation does not exist in a case other than said first decision step and said second decision step.

4. The method in accordance with claim 3, further comprising:

a sixth step of producing, when a correlation exists as determined by said first decision step or said second decision step, a mean of a pair of pixel data different in color from the subject pixel data and adjoining said subject pixel data in a direction of said correlation, multiplying each of said mean and said subject pixel data by a half weighting coefficient, and producing a sum of resulting products; and

a seventh step of producing, when a correction does not exist, a mean of pixel data surrounding the subject pixel data, but different in color from the subject pixel data, multiplying each of the subject pixel data and said

mean by a half weighting coefficient, and producing a sum of resulting products.

5. The method in accordance with claim 3, wherein said second step comprises:

an eighth step of determining, after the decision on the real pixel and by using a flag, a direction in which, among red pixel data or blue pixel data surrounding the subject pixel, but different in color from said subject pixel, pixel data vertically or horizontally facing each other with the intermediary of said subject pixel are correlated;

a ninth step of determining, if the pixel data compared are correlated in a same direction, that the subject pixel is also correlated in said direction, correcting said subject pixel, producing, in accordance with a result of correction, a mean of the subject pixel data and a pair of pixel data adjoining said subject pixel data in said direction, but different in color from said subject pixel data, multiplying each of said mean and said subject pixel data by a half weighting coefficient, and producing a sum of resulting products; and

a tenth step of using, when even a single pixel data differs in the direction of correlation, a correlation assigned to the subject pixel.

6. The method in accordance with claim 5, wherein said ninth step determines that the subject pixel has a correlation identical in direction with one of correlations of the surrounding pixels having a highest degree, produces, in accordance with a result of determination, a mean of the subject pixel data and a pair of pixel data adjoining

said subject pixel data in the direction of correlation, but different in color from said subject pixel data, multiplies each of said mean and said subject pixel data by a half weighting coefficient, and produces a sum of resulting products.

7. The method in accordance with claim 1, wherein said third step comprises inserting preselected data in the virtual pixels beforehand and then executing LPF (Low-Pass Filter) processing in at least one of the vertical direction and the horizontal direction.

8. The method in accordance with claim 2, wherein said third step comprises inserting preselected data in the virtual pixels beforehand and then executing LPF (Low-Pass Filter) processing in at least one of the vertical direction and the horizontal direction.

9. The method in accordance with claim 3, wherein said third step comprises inserting preselected data in the virtual pixels beforehand and then executing LPF (Low-Pass Filter) processing in at least one of the vertical direction and the horizontal direction.

10. The method in accordance with claim 4, wherein said third step comprises inserting preselected data in the virtual pixels beforehand and then executing LPF (Low-Pass Filter) processing in at least one of the vertical direction and the horizontal direction.

11. The method in accordance with claim 5, wherein said third step comprises inserting preselected data in the

virtual pixels beforehand and then executing LPF (Low-Pass Filter) processing in at least one of the vertical direction and the horizontal direction.

12. The method in accordance with claim 6, wherein said third step comprises inserting preselected data in the virtual pixels beforehand and then executing LPF (Low-Pass Filter) processing in at least one of the vertical direction and the horizontal direction.

13. An image signal processing method using a plurality of photosensitive cells, each of which is shifted from a geometric center of an adjoining photosensitive cell by half a pitch in at least one of a direction of row and a direction of column for separating incident light representative of a scene into three primary colors and executing photoelectric transduction with separated light, using said plurality of photosensitive cells as real pixels, converting image signals output from said plurality of photosensitive cell to digital image data, and executing, by using said digital image data, interpolation for generating virtual pixels between said real pixels to thereby generate luminance data and chrominance data, said image signal processing method comprising:

a first step of obtaining, when the image data are bidimensionally arranged such that green of image data appears in a square lattice pattern, red pixel data from the real pixels facing each other in one diagonal direction at both sides of green of said image data, and obtaining blue pixel data from the real pixels facing each other in the other diagonal direction at both sides of green;

a second step of generating a green picture while

executing interpolation with the virtual pixels by using the green pixel data output;

a third step of generating, when either one of a red real pixel and a blue real pixel is a subject pixel to be dealt with, pixel data of a complementary color complementary to green by using a plurality of pixel data different in color from said subject pixel surrounding said subject pixel and positioned in a direction of correlation while making a decision for improving correlation accuracy, and executing interpolation with a virtual pixel by using the pixel data of the complementary color to thereby generate a complementary color picture;

a fourth step of adding said green picture and said complementary color picture to thereby produce sum pixel data; and

a fifth step of limiting either one of a horizontal frequency band and a vertical frequency band of said sum pixel data.

14. The method in accordance with claim 13, wherein said third step comprises a sixth step of making a decision on a horizontal/vertical correlation by using pixel data identical in color with the subject pixel and adjoining said subject pixel in the horizontal direction and the vertical direction.

15. The method in accordance with claim 14, wherein said sixth step produces, before the decision, an absolute value of a difference between pixel data identical in color with the subject pixel and adjoining said subject pixel at a left-hand side in the horizontal direction and said subject pixel as a first horizontal difference absolute

value, produces an absolute value of a difference between pixel data identical in color with said subject pixel and adjoining said subject pixel at a right-hand side in the horizontal direction and said subject pixel as a second horizontal difference absolute value, produces a sum of said first horizontal difference absolute value and said second horizontal difference absolute value as horizontal comparison data, produces an absolute value of a difference between pixel data identical in color with said subject pixel and positioned vertically above said subject pixel as a first vertical difference absolute value, produces an absolute value of a difference between pixel data identical in color with said subject pixel and positioned vertically below said subject pixel as a second vertical difference absolute value, and produces a sum of said first vertical difference absolute value and said second vertical difference absolute value as vertical comparison data;

said sixth step comprising:

a first decision step of determining that a vertical correlation exists if a difference produced by subtracting said vertical comparison data from said horizontal comparison data is greater than or equal to a preselected value;

a second decision step of determining that a horizontal correlation exists if a difference produced by subtracting said horizontal comparison data from said vertical comparison data is greater than or equal to a preselected value; and

a third decision step of determining that a correlation does not exist in a case other than said first decision step and said second decision step.

16. The method in accordance with claim 15, further comprising:

a seventh step of producing, when a correlation exists as determined by said first decision step or said second decision step, a mean of a pair of pixel data identical in color with the subject pixel data and adjoining said subject pixel data in a direction of said correlation, multiplying each of said mean and the subject pixel data by a half weighting coefficient, and producing a sum of resulting products; and

an eighth step of producing, when a correction does not exist, a mean of pixel data surrounding the pixel data, but different in color from said pixel data, multiplying each of said subject pixel data and said mean by a half weighting coefficient, and producing a sum of resulting products.

17. The method in accordance with claim 15, wherein said third step comprises:

a ninth step of determining, after the decision on the real pixel and by using a flag, a direction in which, among red pixel data or blue pixel data surrounding the subject pixel, but different in color from said subject pixel, pixel data vertically or horizontally facing each other at both sides of said subject pixel are correlated;

a tenth step of determining, if the pixel data compared are correlated in a same direction, that the subject pixel is also correlated in said direction, correcting said subject pixel, producing, in accordance with a result of correction, a mean of the subject pixel data and a pair of pixel data adjoining said subject pixel data in said direction, but different in color from said subject pixel

data, multiplying each of said mean and said subject pixel data by a half weighting coefficient, and producing a sum of resulting products; and

an eleventh step of using, when even a single pixel data differs in the direction of correlation, a correlation assigned to the subject pixel.

18. The method in accordance with claim 17, wherein said eleventh step determines that the subject pixel has a correlation identical in direction with one of correlations of the surrounding pixels having a highest degree, produces, in accordance with a result of determination, a mean of the subject pixel data and a pair of pixel data adjoining said subject pixel data in the direction of correlation, but different in color from said subject pixel data, multiplies each of said mean and said subject pixel data by a half weighting coefficient, and produces a sum of resulting products.

19. The method in accordance with claim 13, wherein the interpolation of the virtual pixels comprises executing LPF processing with said virtual pixels after insertion of preselected data in said virtual pixels or generating green and the color complementary to green in accordance with a result of decision on the correlation of the pixel data surrounding said virtual pixels.